21. A method for replacing a section of blood vessel inner layer comprising the steps of:

forming an incision into the blood vessel;

removing a section of an inner layer of the blood vessel through the incision, wherein the removal creates at least one end flap in a remaining blood vessel inner layer;

providing an artificial blood vessel inner layer comprising a diameter arranging element at one end thereof, creating an expandable end, and a supple tubular section having inner and outer surfaces;

inserting the expandable end of said artificial inner layer into said blood vessel through the incision in the direction of blood flow; and

positioning said artificial inner layer within said blood vessel so that said expandable end is positioned adjacent said remaining blood vessel inner layer at a downstream location from said incision; and

retaining said expandable end against said blood vessel by said diameter arranging element.

22. A method as in claim 21, wherein said providing step comprises providing an artificial blood vessel inner layer having a tubular section comprising a fluoro carbon polymer.

23. A method as in claim 21, wherein said providing step comprises providing an artificial blood vessel inner layer having a tubular section that has a length at least as long as said removed section of blood vessel inner layer.

24. A method as in claim 21, wherein said providing step comprises providing an artificial blood vessel inner layer having a diameter arranging element comprising stainless steel.

25. A method as in claim 21, wherein said providing step comprises providing an artificial blood vessel inner layer having a diameter arranging element comprising a length of memory metal preprogrammed to expand at a determined temperature.

26. A method as in claim 21, wherein said providing step comprises providing an artificial inner layer having an enclosure comprising a fluid-tight enclosure.

27. A method as in claim 21, wherein said providing step is carried out with said diameter arranging element made of a metal.

28. A method as in claim 21, wherein said providing step is carried out with said diameter arranging element in the form of a coil.

29. A method as in claim 21, wherein said providing step is carried out with said diameter arranging element and said supple tubular section made of different materials.

30. A method as in claim 21, wherein said providing step is carried out with said expandable end created by folding a portion of said tubular section back over the outer surface creating an enclosure with said diameter arranging element at least partially captured therein.

31. A method as in claim 21, wherein said providing step is carried out with said expandable end created by at least partially capturing said diameter arranging element within said tubular section.

32. A method as in claim 21, wherein said positioning step comprises positioning said artificial inner layer using a catheter.

33. A method as in claim 32, wherein said catheter comprises an elongate member slidably housed within a hollow sheath.

34. A method as in claim 32, wherein said catheter comprises a blood vessel widener.

35. A method as in claim 34, wherein said widener comprises a cone-shaped element operably attached to a distal end of said catheter.

36. A method as in claim 34, wherein said widener comprises an inflatable balloon operably attached to a distal end of said catheter.

37. A method as in claim 34, wherein said widener is wider than said end section during said inserting step and narrower than said end section after said retaining step due to said diameter arranging element expanding during said expanding step.

38. A method as in claim 34, wherein said widener has substantially the same diameter as an internal diameter of said blood vessel.

39. A method as in claim 34, wherein said retaining step comprises using said widener to widen said diameter arranging element in order to press said end section against said blood vessel.

40. A method as in claim 21, wherein said retaining step comprises expanding said diameter arranging element so that an outer diameter of said tubular section is approximately equal to an inner diameter of said blood vessel.

41. A method as in claim 21, wherein the providing step comprises providing an artificial blood vessel inner layer further comprising a diameter arranging element at each end thereof creating two expandable ends.

42. A method as in claim 21, further comprising the step of stitching one end section to said blood vessel.

43. A method as in claim 34, further comprising the step of bunging the blood vessel.

44. A method as in claim 43 wherein said bunging step comprises bunging said blood vessel using said widener.

45. A method as in claim 34, further comprising the step of exerting pressure outwardly on said diameter arranging element with said widener during a withdrawal of said catheter from said blood vessel.

46. A method for lining a section of a blood vessel comprising the steps of:

forming an incision into the blood vessel;

removing matter from a length of the blood vessel through the incision;

providing an artificial blood vessel inner layer comprising first and second ends, a diameter arranging element at said first end thereof creating a first expandable end, and a supple tubular section having inner and outer surfaces between the first and second ends;

inserting the first expandable end of said artificial inner layer into said blood vessel through the incision;

positioning said artificial inner layer within said blood vessel so that said artificial inner layer covers at least a portion of said length of the blood vessel; and

retaining said artificial inner layer against the blood vessel by expanding said diameter arranging element.

47. A method as in claim 46, wherein said providing step comprises providing an artificial blood vessel inner layer having a tubular section that has a length at least as long as said removed section of blood vessel inner layer.

48. A method as in claim 46, wherein said providing step comprises providing an artificial inner layer having an enclosure comprising a fluid-tight enclosure.

49. A method as in claim 46, wherein said providing step is carried out with said diameter arranging element and said supple tubular section made of different materials.

50. A method as in claim 46, wherein said providing step is carried out with said diameter arranging element and said supple tubular section made of different materials.

51. A method as in claim 46, wherein said positioning step comprises positioning said artificial inner layer using a catheter.

52. A method as in claim 51, wherein said catheter comprises an elongate member slidably housed within a sheath.

53. A method as in claim 51, wherein said catheter comprises a blood vessel widener.

54. A method as in claim 46, wherein said retaining step comprises expanding said diameter arranging element so that an outer diameter of said tubular section is approximately equal to an inner diameter of said blood vessel.